# Injury Prediction for Competitive Runners

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# Table of Contents



# Introduction

Staying injury free is a major factor for success in sports. Our purpose was to use machine learning for the prediction of injuries in runners, based on detailed training logs.

# Dataset

## Injury Prediction In Competitive RunnersDataset

provided by Kaggle website

- Dataset was obtained from kaggle in form (.csv)
- Has 13 columns and 42766 rows.
- Include a binary column indicating whether

  this training setup resulted in an injury (1) or not (0).
- The target I want to predict is “injury”.

# Cleaning data

01

## Missing

Filling the missing value

02

## Unnecessary

Drop the unnecessary features

03

## Duplicate

Check for duplicates data

04

## Type

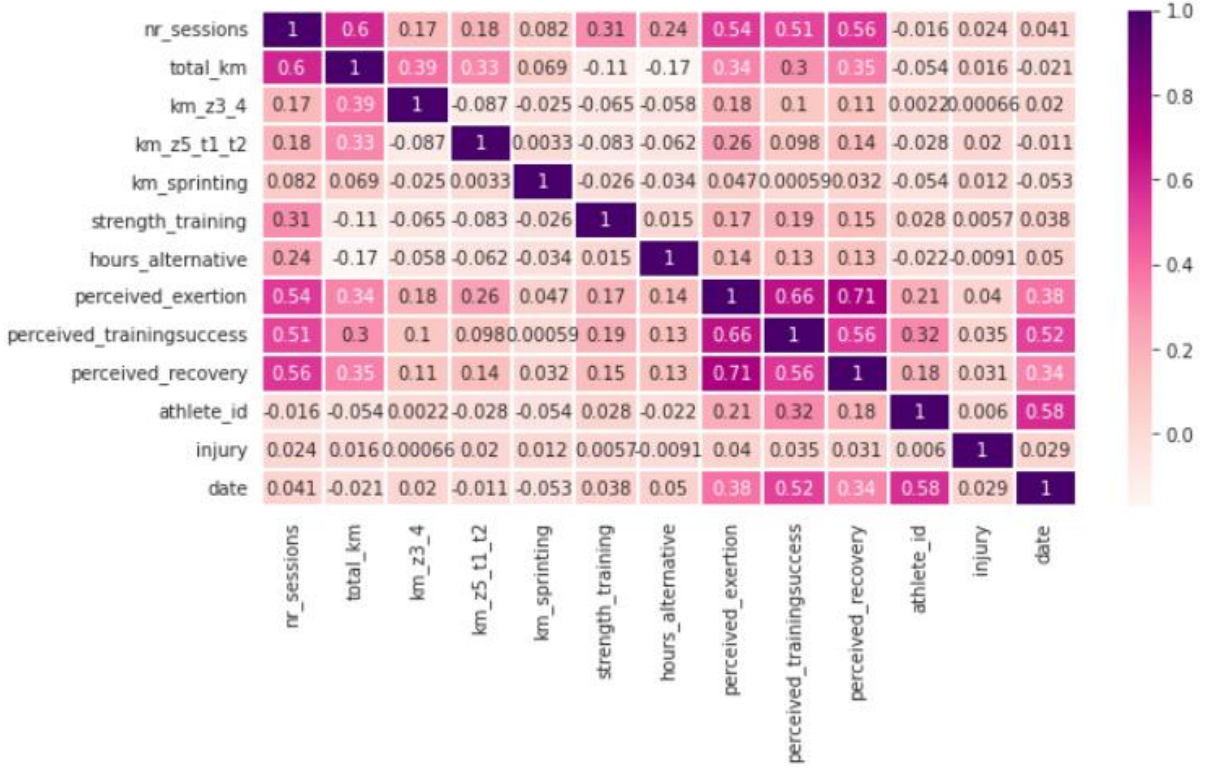
Checking features type

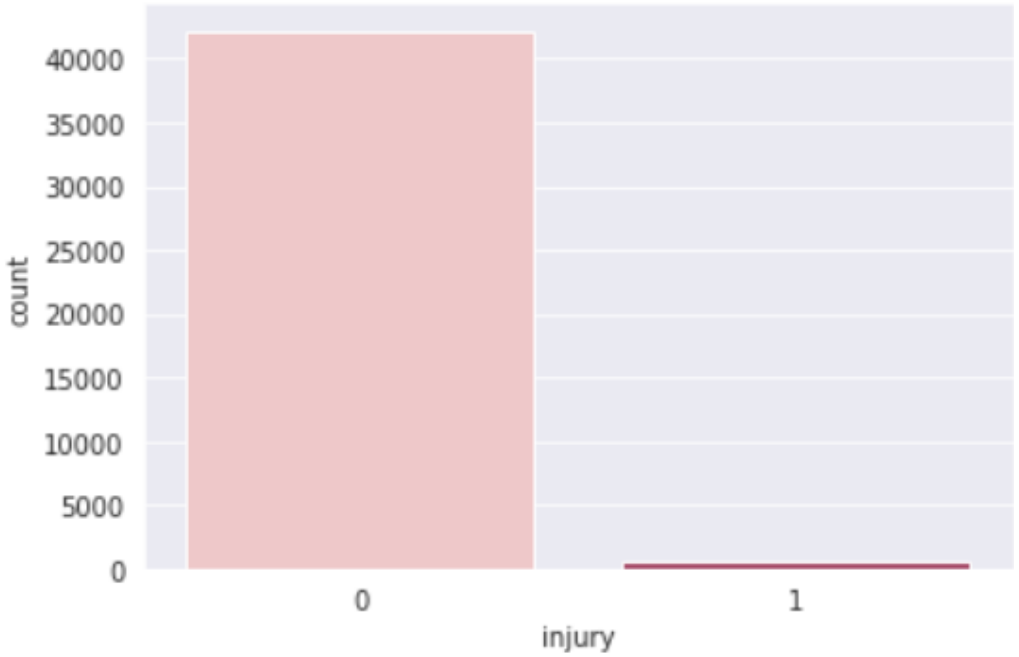
# Visualization

## Exploring Data Analysis

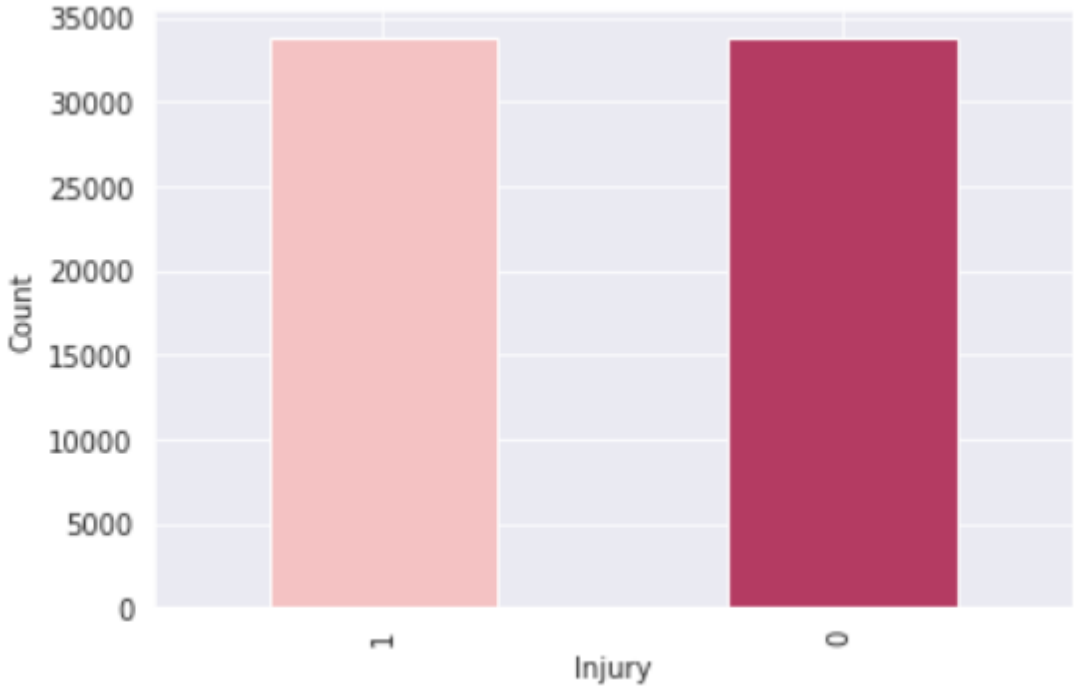
## (EDA)

The correlation heatmap was used to find the correlation between factors




This plot shows there is unbalance between in the dataset so, in preprocessing part I will balance between them.




After balancing data.

# The Model Used

- Logistic Regression.
- Xgboost.
- KNN.

# Comparison Models

| | Logistic Regression | xgboost | KNN |
|---|---|---|---|
| **Accuracy** | 86% | 62% | 97% |
| **Recall** | 0.63 | 0.87 | 0.96 |
| **fi-score** | 0.62 | 0.86 | 0.98 |

# Conclusion

KNN

Is the best model to predict the possibility of Injury for Competitive Runners.

# Tools Used

- For Data Processing

  Pandas, NumPy

- For Building The Model

  Scikit-learn library

- For Visualization

  - Matplotlib

  - seaborn

# Thanks!

Do you have any questions?